



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,587	11/21/2003	Paul Moroz	245350US6YA	9386
22850	7590	01/20/2006		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER DEO, DUY VU NGUYEN	
			ART UNIT	PAPER NUMBER
			1765	
DATE MAILED: 01/20/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. .

10/717,587

Applicant(s)

MOROZ, PAUL

Examiner

DuyVu n. Deo

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-86 is/are pending in the application.
- 4a) Of the above claim(s) 57 and 84-86 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-10, 12-56, 58-61, 63-65, 69-73 and 75-83 is/are rejected.
- 7) ☒ Claim(s) 5, 11, 62, 66-68 and 74 is/are objected to.
- 8) ☒ Claim(s) 57 and 84-86 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/7/05, 6/21/05.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 6-10, 12-56, 58-61, 63-65, 69-73, 75-83 are rejected under 35 U.S.C. 102(b) as being anticipated by Savas (US 5,983,828).

Savas describes an etching method comprising: coupling a first power to provide a plasma to process a substrate; couple a second low RF power cycles to the system to neutralize charges that have accumulated on the surface (col. 3, line 35-59; col. 8, line 57-col. 9, line 17). This would reduce accumulation of negative and positive charge on the exposed surfaces of the system including the substrate, electrode, or substrate holder.

Referring to claims 3, 25-33, 41, 47-55, 58, 60, 78-80 the method further includes introduces ionizable gas into the chamber, forms a plasma from the ionizable gas, and exposing the substrate to the plasma (col. 8, line 17-35). The low power cycles range from 200-2000 W (col. 9, line 45-49) or 500W as shown in an example (col. 9, line 20-30, 64). This power range would be capable to cause a secondary electron yield to be greater than unity from the exposed surfaces, such as substrate surface; therefore, it would correspond to a range of electron energy as in the formula of claims 25-32, 48-55.

Referring to claims 18, 19, 36-38, 56, 83, the substrate of silicon or insulating layers (col. 2, line 16-20), and chamber walls made of quartz or aluminum (col. 8, line 5-8) would read on

Art Unit: 1765

claimed secondary electron emitter surface, which comprises a material having a secondary electron yield greater than unity for a range of energy levels.

Referring to claims 2, 59, the second low RF power is less than first power (col. 9, line 25-30).

Referring to claims 4, 61, the second power follows the coupling of the first power without extinguishing the plasma (col. 9, line 5-10).

Referring claims 6-10, 63-65, 71, the method further coupling a bias power (claimed third power) to the system to continuing processing the substrate, wherein the power is about 10-20 eV, which would provide power less than 500 W or the first and second power (col. 11, line 55-col. 12, line 30).

Referring to claims 12, 69, the coupling of first and second powers is alternated (col. 3, line 38-41).

Referring to claims 13, 20-24, 39-46, 70, 72, 73 the first power in an example is 5000W (col. 9, line 64); therefore, the second power would correspond to 500 W (col. 9, line 20-30).

Allowable Subject Matter

3. Claims 5, 11, 62, 66-68, 74 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 5, 62, 66-68, are allowable because applied prior art, Savas doesn't teach or suggest terminating coupling of the first power and extinguishing the first plasma corresponding to the coupling of the first power, forming a second plasma by coupling the second power.

Art Unit: 1765

Claim 11 is allowable because applied prior art, Savas, doesn't teach or suggest extinguishing said second plasma corresponding to coupling of the second power; coupling a third power to said plasma processing system, wherein said coupling of said third power forms a third plasma, and continuing to process said substrate using said third power.

Claim 74 is allowable because applied prior art, Sanvas, doesn't teach or suggest the second power is higher than the first power. He describe the second power is 10-100 times less than the first power (col. 9, line 25-30).

Claim Rejections - 35 USC § 112

4. Claims 18, 29 recite the limitation "the exposed surfaces". There is insufficient antecedent basis for this limitation in the claim.

5. Claim 83 recites the limitation "said intermediate power". There is insufficient antecedent basis for this limitation in the claim.

Information Disclosure Statement

6. The information disclosure statement filed 6/21/05 and 2/7/05 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. There are no records of the foreign documents cited in the above IDS.

Election/Restrictions

7. Applicant's election with traverse of the method claims in the reply filed on 12/14/05 is acknowledged. The traversal is on the ground(s) that a search and examination of the entire

Art Unit: 1765

application would not place a serious burden on the Examiner, whereas it would be a serious burden on Applicant to prosecute and maintain separate applications.. This is not found persuasive because applicant has not traversed that the apparatus can be used to practice another and materially different process such as cleaning a substrate.

The requirement is still deemed proper and is therefore made FINAL.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DuyVu n. Deo whose telephone number is 571-272-1462. The examiner can normally be reached on 6:00-2:30 Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Primary Examiner

Duy-Vu N. Deo

1/18/06

